Montana's Regional Innovation Grant (RIG)

MEETING SUMMARY

CORE LEADERSHIP GROUP

Ronan, Montana

Prepared for

Montana Department of Labor and Industry

January 23, 2009

Montana's Regional Innovation Grant (RIG)

CORE LEADERSHIP GROUP (Meeting 3 of 6)
January 23, 2009

Session Summary

SESSION OBJECTIVES

1. Update the Core Group on what's happened since the November meeting.
2. Review and validate industry cluster.
3. Plan for evaluating the career path pipeline and prep for the February 18, 19 Core Group meeting.
4. Start thinking about the Final Draft Report.

INTRODUCTION

The core group for Montana's Regional Innovation Grant (RIG) held their third meeting on Jan. 23, 2008. The following summarizes who attended; reports on recent conferences and data; tentative agreements on industry clusters and those to receive further study; and future meetings

CORE GROUP MEMBERS ATTENDING

- Tim Bronk (Superintendent, Darby Schools)
- Susie Burch (Flathead Community College)
- Pat Hulla (Montana Dept. of Labor and Industry; nw Montana)
- Debbie Krantz (Lake/Sanders County Job Service; Polson/Thompson Falls)
- Greg Landon (MTC Job Corps)
- Billie Lee (Lake County Community Development)
- Ray Marshall (Sanders County Community Development)
- Kim Morisaki (Montana West Economic Development)
- Jennifer Nelson (NW Montana Economic Development District)
- Doug Rauthe (Northwest Montana Human Resources
- Dixie Stark (Literacy Bitterroot; Darby School Board)
- Lynn Stocking (University of Montana, College of Technology)
- Paul Uken (Montana Logging Association)
- Charlie Wright (Montana Department of Commerce)

TECHNICAL ADVISORS/FACILITATORS

- Kay Strayer (Montana Department of Labor and Industry)
- Marcia Hogan (Facilitator)
- Sherry Munther (Facilitator)
- Virginia Tribe (Facilitator)

COMPLETED AGENDA ITEMS

Updates – What's happened since we met in November?

Conference Review
Core group members reviewed what they learned at conferences the last two months that could help us. They were asked to send summaries/notes from those conferences to the RIG website.

Discussing the Current Operating Environment
Members identified and discussed elements in Western Montana's current operating environment including the downturn in the economy, business closures, and job layoffs. They also talked about the increase in numbers of people entering training and education programs as they seek new careers/jobs.

The Group discussed the new Administration's desire to stimulate the economy through a number of strategies including the creation of "green jobs". The Group was directed to the Montana State University website where they define and discuss "green jobs".

Overall, the Group agreed on the need to be flexible in the RIG process with desired results that include:

- Identification of workforce needs for current industries that will remain viable as well as new/emerging industries;
- A recognition that change will be a constant and workforce training needs include basic and portable skills;
- Taking advantage of opportunities to adjust to stimulus dollars where useful.

Progress Reports on Mini-Grants

- Billie Lee (Lake County Community Development) and Jennifer Nelson (NW Montana Economic Development District) updated the Group on grants involving their areas and will have preliminary reports to be included in the RIG Draft Final Report mid-March. As they are completed, they will be added to the Report.
- MAEDC was not represented at the meeting to report on their progress.

Reviewing/Validating "White Papers" on Industry "Clusters"

> ***"A cluster is a geographically-bounded concentration of similar, related, or complementary businesses, with active channels for business transactions, communications, and dialogue, that share specialized infrastructure, labor markets, and services, and that are faced with common opportunities and threats."*** ("Montana Industry Cluster Analysis", May 2003)

Members of the Industry Cluster Committees presented their white paper findings. A brief summary of their observations follows. Please refer to the attached white papers at the end of this document for more information.

Energy Development (Committee Members - Billie Lee, Jennifer Nelson, Shelly Fyant, Pat Hulla, Jim Morton)

- A complicated and huge industry that the committee segmented into the following three "levels of activity":
  - Level 1: Traditional energy sources such as electrical transmission
  - Level 2: Developing energy sources as solar and biomass
  - Level 3: Future potential as conservation and geothermal
- Energy production is very small in Montana. Solar and other developing sources are currently small in size.
- Jobs decrease following construction of facilities; fewer workers are needed to maintain service. Linemen are a long-term workforce job. Workforce needs include workers who can reason and apply math skills. Today's students get math, but not the practice to apply.
- Some commented that this was a reflection on the imbalance between four-year universities and two-year technical colleges in Montana.
- Certification of solar programs will be necessary as industry grows.
- The future of alternative energy includes co-generation; carbon credits; and plant-produced chemical products (likely limited by the expense of technology development and markets).

Forest-Based Products and Stewardship (Committee Members - Paul Uken, Jennifer Nelson, Tracy McIntyre, Charlie Wright, Chad DeLong

- This industry is very labor intensive and diverse. It ranges from sawmills to value-added products. Product is well used from bole to bark and includes a small-wood niche.
- Transportation is costly and the industry needs to look at rail.
- In particular, housing triggers the utilization of wood. Currently, the situation is very grim due to the construction slowdown for housing starts.
- "Green building" also impacts housing starts.

Restoration and Remediation (Committee Members - Ruth Link, Greg Landon, Ray Marshall, Marnie Criley)

- Restoration, conservation and forestry need to be combined to make money at it.
- The white paper review led this Committee to recommend folding part of this industry into forestry and to create a new infrastructure cluster in light of the public work projects that may receive funding through a federal economic stimulus program. And we need to examine what's necessary to ensure public work projects employ Montana businesses and workers.
- We need to identify/overcome barriers like construction bonding requirements and getting operator certification for small, local companies.
- It's unclear as to whether there are sustainable jobs in mining restoration.

Health Care/Medical (Committee Members - Doug Rauthe, Tim Bronk, Susie Burch, Rosalie Cates and Lynn Stocking

- The industry will continue and will grow.
- Components include provider and consumers.
- There is a need for health care reform for all.
- The availability of professionals is an issue especially in rural areas.
- Use of electronic communication to provide medical care is more limited in western Montana compared to eastern Montana.
- We need to offer short-term training programs for certification, continuing education, and skill upgrades. We need a "mixed-model" education including on-line - especially to allow employees to encourage career mobility such Certified Nursing Assistants to Licensed Practical Nurses. Student numbers are limited due to clinical site requirements.
- Governing boards play a significant role in what can happen regarding various health care occupations/professions.

Technology (Committee Members - Marcy Allen, Jay Wilson Preston, Kim Morisaki, Dixie Stark, Debbie Krantz)

- This is a huge, varied industry that includes telecommunications; biomedical/biotechnology; data management; geospatial mapping, etc. This diversity makes it hard to identify training needs. Global networking, ability to diversify andflexibility are key to future of these industries.
- Those involved in technology share common goals to live where they want and commitment to workers.
- "Techies" often lack good business skills.
- We need to address network redundancy and the gap with programmers.
- Does western Montana offer a tech friendly environment? Yes - in terms of offering an appealing small town and natural environment where people want to live.
- There is a need for responsiveness in telecommunication infrastructure.

Affirming Clusters – Completing "White Paper" Tasks

Criteria for Advancing Clusters

Group members brainstormed criteria to help them determine which clusters should be advanced, etc. Those criteria included the following:

- Do people have to have/need the industry?
- Will it be supportable within new "society values" and initiatives (energy independence/efficiency; "green jobs"/planet friendly; restoration of infrastructure, environment; technology, etc.)?
- Might the 7-County region benefit?
- Does there appear to be real opportunity within today's operating environment?
- Can the basic skills and specific skills/training be made available to provide the needed workforce for a particular cluster?
- Might there be adequate resources to support the industry in a sustainable way?

Agreement on Clusters that Should be Advanced; Additional Clusters

After further discussion, the Group agreed to advance the following industry clusters in terms of completing their white papers (see attached Additional White Paper Task sheet at the end of this document). Committee members regrouped as follows:

- **Energy** (Committee Members - Billie Lee, Jennifer Nelson, Shelly Fyant, Pat Hulla, Jim Morton and Kim Morisaki)

- **Forest-Based Products, Stewardship and Forest Restoration** (Committee Members - Paul Uken, Jennifer Nelson, Tracy McIntyre, Charlie Wright, Chad DeLong

- **Infrastructure/Public Works** (Committee Members - Greg Landon, Ray Marshall, Doug Rauthe and Dixie Stark. Charlie Wright and Debbie Krantz will provide assistance. Kim Morisaki will prepare the part on network redundancy.

- **Health Care** (Committee Members - Doug Rauthe, Tim Bronk, Susie Burch, Rosalie Cates, Lynn Stocking and Debbie Krantz

(Marcy Allen, Jay Wilson Preston, Ruth Link and Marnie Criley were on industry cluster committees that were not carried forward. They were not at the meeting and were not re-assigned to a new committee.)

Group members also agreed that technology, education, research and development, environment, and entrepreneurship cross over all the industries.

Where do we go from here?

"Homework"

- Each of the final four industry cluster sub-committees will be prepared to:
  - Present their completed "white paper" tasks at the February 18, 19 Core Leadership Group meeting.
  - Present draft recommendations for their assigned industry cluster.
  - Present draft overall recommendations.
  - As we come to the end of the process, think about regional "vision" and the social network needed to support it.

Mark Your Calendars

- The next Core Group meeting will be Wednesday, February 18 and Thursday, February 19. The meeting location in the Ronan/Polson area will be announced as soon as possible so people can make overnight reservations.

Regional Innovation Grant (RIG) WHITE PAPER
MONTANA REGION 1
Flathead, Lake, Lincoln, Mineral, Missoula, Ravalli and Sanders Counties
January 14, 2009

Shelly Fyant, Kicking Horse Job Corps
Pat Hulla, Montana Department of Labor & Industry
Billie Lee, Lake County Community Development Corporation
Jim Morton, District XI Human Resource Council
Jennifer Nelson, Northwest Montana Economic Development District

INDUSTRY CLUSTER: ENERGY

Executive Summary

The energy industry in western Montana ranges from the traditional and stable utilities through more established alternatives such as solar. It also includes some preliminary exploration into other alternatives such as geothermal. A review of NAICS codes for regional businesses shows a wide variety in all counties and many small entities. Indications are that current and near future workforce needs will primarily be for replacement of an aging workforce, particularly for linemen. In the longer term plans for alternative development and replacement of transmission systems may open up a demand for different skill sets, customer service and skilled transmission construction workers. Most companies are in initial planning phases for this. It is recommended that workforce planning groups such as RIG continue to communicate with the energy industry in western Montana and monitor developments. As more concrete information is available planning groups consisting of workforce development, education, industry, economic development and community based organizations can develop a concrete response to workforce needs.

1. What entities make up this industry cluster in western Montana?

Utilities

- Mission Valley Power
  36079 Pablo West Road, Pablo
  Regulated electric distribution, transmission, energy supply within the boundaries of the Flathead Reservation36079 Pablo West Rd, Pablo, MT 5985536079 Pablo West Rd, Pablo, MT 5985536079 Pablo West Rd, Pablo, MT 59855

- Northwestern Energy, LLC
  40 East Broadway, Butte
  The utility operations consist of regulated electric and natural gas distribution, transmission, energy supply and non-regulated electric operations. In addition, they are pursuing electric transmission and generation opportunities.

- Missoula Electric Cooperative
  1700 W Broadway, Missoula
  Provides electric service primarily in Missoula County and portions of Mineral and Ravalli Counties.

- Ravalli County Electric Cooperative
  Corvallis, MT
  Provides electric service to Ravalli County, south of Florence

- Flathead Electric Cooperative
  2510 US Highway 2 East, Kalispell, MT
  This electric cooperative is multimillion-dollar business that serves a variety of residential and commercial members with 3,800 miles of line, and serves the entire Flathead Valley and Libby, along with several hundred members along the Montana-Wyoming border.

- Northern Lights, Inc., (NLI)
  Sagle, Idaho, is a member-owned rural electric cooperative serving northern Idaho, western Montana and northeast Washington.

- PPL Montana
  Billings, MT
  PPL Montana owns and operates 11 hydroelectric projects that have a total generating capacity of 602 megawatts, as well as one reservoir. The facilities are located on the Clark Fork, Flathead, Madison and Missouri rivers and on West Rosebud Creek. PPL EnergyPlus currently serves about 80 percent of the large industrial and commercial customers in Montana who have chosen to buy their supply from the market.

- Avista Corporation (Primarily Sanders Co)
  Spokane, WA
  Avista Corp. is an energy company involved in the production, transmission and distribution of energy as well as other energy-related businesses. Over 50% of the power that Avista supplies comes from Montana. Eighty percent of that comes from the Noxon and Cabinet Gorge Hydroelectric Dams in northwestern Montana. Avista Utilities is our operating division that provides service to 352,000 electric and 311,000 natural gas customers in three Western states.

Pellet Manufacturers (pellet stove heat)

- Eureka Pellet Mill
  Superior, MT

- Western Bee Corp
  Polson, MT

Natural Gas

- Northwestern Energy Corporation (Branch),
  Kalispell, MT

- Avista Corporation,
  Sanders County, MT

- Jefferson Energy Trading, LLC
  Whitehall, MT

- Commercial Energy of Montana (Cutbank – no evidence of hire in Region 1)

- Croft Petroleum Co. (Highline company – drilling)

- Energy West Resources, Inc
  Great Falls, MT
  Developer and supplier of natural gas – serves Flathead, Missoula and Ravalli Counties

Alternative Energy/Bio Fuels

- Mission Valley Renewable Energy (new)
  54830 Hwy 93 S, Polson, MT
  Establishing a plasma-gasification plant to utilize bio-waste and old tires to produce alternative fuels

Solar

- Solar Plexus
  1605 Stephens, Missoula
  Installers of solar and hydro systems – residential and commercial

BioFuels

- AE Biofuels, Inc.
  109 S Parkmont Street, Butte (only one in the state)
  Integrated cellulose and starch ethanol demonstration facility in the United States. The 9,000 square foot demonstration plant will process a combination of feedstocks including various grasses, wheat straw, corn, corn stover (corn stalks), and bagasse (sugar cane stalks).

- Montana Renewables
  Missoula, MT
  Produces green “carbochemicals” or biomass chemicals. Derived from plant material, they replace petroleum based chemicals in many products from concrete to fabrics and pharmaceuticals. Glucaric acid, a biodegradable compound, is made from the raw sugars in corn syrup.

- Sustainable Systems
  Missoula, MT
  An agricultural company focused on high-value culinary oil, biobased fuels, and bioproducts. Sustainable has initiated an expansion of its oilseed crush facility in Culbertson, MT (the "Montola" facility). The Montola facility is expected to double its current oilseed processing capacity to 600 tons per day after the expansion.

Other

- Wild Madrone LLC
  Flathead presence/office or residence only
  Great Falls, Montana
  San Francisco, California
  Boise, Idaho
  Email: request@wildmadrone.com
  Phone: (406) 727.2060

Wild Madrone, LLC identifies optimal land assets for large-scale wind energy complex development, works with landowners and meteorologists to determine site capacity and project feasibility, and initiates the development process to achieve efficient, strategic results. We focus on sites with bountiful wind resources, good transmission line access and a high degree of land development potential. Wild Madrone maximizes the potential success of wind developments by partnering with wind developers, utilities and transmission companies to identify sites of mutual strategic interest.

A study of the Regional North American Industry Classification System codes indicates that industry exists in all seven counties of western Montana in the following energy related areas:

211 – Oil and Gas Extraction
212 – Mining, non oil and gas
214 – Support Activities for Mining
221 – Utilities
237 – Heavy and Civil Engineering Construction
324 – Petroleum and Coal Manufacturing
424 – Wholesale/Distribution
486 – Pipeline Transmission
562 – Waste Management and Remediation

2. What are the high impact organizations within this cluster and where are they located? Draw a "map" that helps us have some sense of "Region"

There appear to be 3 levels of activity in the energy field in Western Montana.

- Level 1: Stable and sustaining traditional buying and selling of energy supply, some growth potential, primarily electric utilities, hydro (currently most high impact)
- Level 2: Developing – energy alternatives such as solar, biofuel, Fuels for Schools
- Level 3: Preliminary stages of development with future potential – geothermal and conservation

HIGH IMPACT "MAP" of Current BUSINESSES BY LEVELS and NAICS codes:

Level 1
NAICS code 221/utilities
Present in **every county** in the Region

NAICS code 237/Heavy Construction
In **all counties except Mineral and Lake**

NAICS code 424/Distribution
In **all counties except Lincoln and Mineral** but served by other counties

Level 2
NAICS code 221/alternative

221119/Non fossil fuel electrical power only classified in Flathead County, however, most utilities are developing alternatives because of requirements to reduce carbon dioxide. These **impact all counties at some level** and may increase as those alternatives come on line.

Level 3
NAICS codes 221/237 for potential geothermal; sites identified in Ravalli, Sanders, Missoula and Lake Counties but future workforce demand uncertain. Currently in the developmental stage with no concrete projects approaching implementation stage yet.

From Montana Department of Environmental Quality:
The potential for geothermal development in Montana, and all Western states, continues to be assessed. The *DOE'S* ***GEOPOWERING THE WEST program has compiled information from such analysis, which indicates that Montana has more than 25,000 square miles of high-potential sites and areas.***

The current Montana Geothermal Project includes a variety of outreach activities to increase state and regional awareness of the economic opportunities for geothermal development. Outreach activities started in 2006 include a geothermal working group, presentations to regional and national energy groups and support of statewide project development efforts.

3. **From the perspective of entities involved, what is the condition of the industry now and why? From their perspective, what realistic growth opportunities exist?**

   a. Utility companies: Stable workforce; sellers of energy to consumers – not energy developers or industry-industry marketers

Bonneville Power Administration - Gail Kuntz, Constituent Account Executive - Montana
Key issues the industry faces today include (in no priority order):

- Price volatility
- Growing demand (which may be moderated both by recession and new demand-side technologies)
- Rising market prices (energy costs)
- Rising prices for commodities such as steel
- Greater consumer interest in managing energy costs and use
- Aging infrastructure (especially transmission)
- Climate change initiatives that will alter the resource mix
- Concerns over energy independence and security (cyber, business continuity)
- Increased regulation, especially related to reliability
- Requirements for greater percentage of renewables in resource portfolios
- Access to capital

Despite these issues, the utility industry is more robust when compared to other industries. But it also faces major change, what some would call "transformation."

BPA Growth Opportunities:

The major growth areas will be those areas that support the new Administration's key energy initiatives – reduction of greenhouse gas emissions and energy independence. And, by association, grid reliability will be a major issue because of the need to integrate new resources. Expect to see a big surge in renewable energy (especially wind), energy efficiency and new technologies that make demand side management consumer-friendly (advanced metering technologies, Smart Grid, etc.). We already are seeing a huge influx of wind development.

Renewables:

Integrating new renewables (especially intermittent resources such as wind) into an already constrained grid will call for innovative solutions. The focus will be on grid expansion and the need to change federal and state laws to address obstacles to transmission siting.

Energy efficiency: Energy efficiency will likely lead to increased low-income weatherization, incentives for local utilities to increase energy efficiency programs, Smart Grid and green building.

Coal: Given that better than 50 percent of today's electricity comes from coal, FutureGen is back on the table. FutureGen is a DOE Clean Coal Demonstration Project and is supported by the president-elect's transition team.

Natural gas: While new technologies are in the works, considerable uncertainty remains about the pace of development and the viability of emerging technologies. In the interim, new natural gas-fired and other state-of-the-art resources may need to be developed as a bridge to the new technologies. This also will require the development of adequate natural gas infrastructure.

Nuclear: The jury is still out on what if any role nuclear power will play. It remains a polarizing subject.

<u>Mission Valley Power</u>

Stable work force; full training programs. Goal: develop opportunities for tribal members for stable, good-paying jobs. They "grow their own"

<u>Northwestern Energy</u>

Currently there is a need for additional baseload resources to serve continued load growth. Price volatility is a factor is a concern, as well as potential for future CO2 taxes. Hydro generation output is not nearly as reliable as previously portrayed. Renewables provide opportunity but the region is still working to determine how much these resources, such as wind, can be supported. In summary, the overriding theme is the uncertain environment in which resource decisions and acquisitions are taking place. There is tremendous risk and uncertainty confronting utilities. Northwestern approaches this environment as a utility with a recognized substantial resource deficit beginning in 2014.

b. Alternative energy development: These are the growth industries that will require a different brand of employee in the future and different skill sets that traditional utility companies. While the only operating company of those mentioned above is Sustainable Systems it maintains corporate offices only in our region and job growth is in eastern Montana.

Solar Plexus
Limited growth expected; they have had to spread out over many states to make a go of the business, only employ one person outside of owners. Tax incentives create a major concern for this business as it encourages less than qualified persons to enter the business with the risk of loss of quality and public opinion that it doesn't work. They recommend the German model for building the industry.

Mission Valley Renewable Energy (MVRE)
Pablo Estimated Opening 2010
Employee Needs – 60 FTE, 3 Shift Operation (Job Specific Skills/Training Needs Available 2/2009). Current Rough Estimates
7 – Engineering Level
7 – Midlevel engineering (associate engineering degrees)
5 – Sr. level management
30 – Materials Handing/Shipping Receiving
3 – Skilled Equipment/Maintenance
8 - Administrative

Northwestern Energy
As a result of the high level of uncertainty, regional utilities appear to be focused on the development of smaller scale renewable resources, DSM (demand side management), planned reliance on the wholesale market, and avoiding significant investments in new thermal generation. In addition, even though preferred portfolios contain pulverized coal, Northwestern will not pursue the development of pulverized coal until the carbon issue is clarified.

Avista Corporation
The energy industry is going through a transformation, the last 50 years the emphasis was on the quality and reliability of the product, prior to that it was electrification. Now the emphasis is environmental, particularly on how to reduce the energy carbon footprint. This emphasis is being driven by climate change. Since a full 1/3 of total energy consumption is used to light, heat and cool buildings, emphasis on reducing consumption will focus on greening of buildings or retrofitting buildings to be more energy efficient. This will require specific skills including engineers, architects, energy auditors, HVAC specialists, and research and development of new energy efficient products. As Smart Grids come on line potential for innovations increase as people can see where their highest use is on their homes. Smart Grids will also increase the number of information technology jobs in the industry as reports are generated and people and companies request those reports. Future jobs in energy include innovation, technology, installation, and marketing.

4. **What infrastructure is critical to this industry cluster as it moves forward?**

Mission Valley Power: Upgraded transmission lines; more availability from alternative (wind, etc) power

MVRE: Complete plant installation

Solar Plexus: recommends feed in tariff to grow the industry resulting in additional employment. Example from greentechmedia.com

The program would be similar to the one that has made Germany the world's largest solar market. Germany's feed-in tariff program requires the utilities to buy all the solar power generated by their customers at government-set prices. The prices are higher than those paid for conventional power, and they are locked into long-term contracts between the utilities and sellers.

As a result, many homeowners and farmers in Germany have installed solar energy systems on their rooftops or on the ground of their properties to profit from the lucrative incentives (see Solar Prices Set in Germany).

Bonneville Power Administration - Gail Kuntz, Constituent Account Executive - Montana

The nation has an aging transmission system, and some are even saying we no longer have a first-world system. New transmission will be needed not only to support reliability, but also to allow integration of wind power.

Transmission will be especially critical in the West, with its large geographic span, given that renewable resources often are located far from urban load centers. Coordination among state, local and federal agencies can expedite the planning, permitting and approval process to provide access to renewable and conventional resources while ensuring grid reliability. Tradable renewable energy certificates may be economically beneficial.

Changes also are needed in transmission systems and the operation of conventional generating resources to accommodate the inherent voltage and frequency fluctuations of intermittent resources such as wind and solar. Future technology advances in controlled demand response, electricity storage and better wind forecasting could help address these challenges.

Significant commitment to and investment in the research and development of low carbon generation resources and interactive grid technologies will be needed if the nation is to meet policy objectives.

Northwestern Energy
Transmission and baseload resources

Avista Corp.
Avista is investing and will continue to invest in new more efficient turbines for their dams, and in new transmission lines.

5. **Generally, what are the current skill sets employed in this industry? What skills/talents are needed to move the industry forward?**

Mission Valley Power: Job readiness to successfully enter training programs to include math skills – specifically algebra and trigonometry

Bonneville Power Administration - Gail Kuntz, Constituent Account Executive - Montana
Executives and managers of the critical occupations identified several common, cross-agency skills needed to achieve current and future business objectives. The common professional development skills most frequently mentioned included:

- Analytics
- Project management
- Problem-solving
- Oral and written communication
- Independent thinking
- Political savvy
- Leadership
- Policy analysis
- Business acumen (particularly BPA-specific)

*demand in our region will vary for these jobs

Solar Plexus
Industry Certification provided by NABCEP, the North American Board of Certified Energy Practitioners. Offers national credentialing and certifications for renewable energy professionals.

Mission Valley Renewable Energy
For Materials Handling/Equipment/Maintenance Personnel: Job Readiness in basic applicable skills – then short-term support for in-house, company/industry or specific on-job training

6. **In an overall sense, what "gaps" do you see regarding this industry cluster and what ideas do you have about bridging those gaps?**

Bonneville Power Administration - Gail Kuntz, Constituent Account Executive - Montana
BPA's Workforce Plan identifies occupations within the agency that are at risk due to changing skill requirements from retirements and competitive, dynamic business conditions. For the following critical occupations, BPA will aggressively mitigate workforce skill gaps via risk treatment plans, i.e. actions to be taken to mitigate critical skill gaps, during FY 2009:

- Critical Skill Experts in Power, i.e. experts in the fields of electric power marketing, scheduling, hydro operations, etc.
- Construction Inspectors, i.e. responsible for the construction and maintenance of the transmission infrastructure
- Transmission Lineman, Hourly Foreman, Chief Operators. The BPA apprentice program for linemen is 4 years long, and journey level linemen require some BPA-specific training.
- Natural Resource Specialists, i.e., plan, develop, and administer a vegetation management or control program, system, process, budget or practice. Desired degrees include biological sciences, agriculture, natural resource management and chemistry.
- IT Specialist

- Contract Specialist, i.e. contract administration for pre-award and post-award functions, including price/cost analysis, negotiation, and administration for services, materials, equipment and/or construction within a major spend category, organizational component, or in a geographical area associated with operating and maintaining a high-voltage electric utility industry.
- Power System Control (PSC) and System Protection and Control (SPC) Craftsman. Training programs are 2.5 to 4 years.
- Customer Support Services, i.e. responsible for customer billing and contract management and administration.
- Public Utilities Specialist, i.e. skills and knowledge concerning the business practices, rate structures and operating characteristics of public utilities. Duties required to perform this occupation are varied. Examples include: Analysis of utility rate schedules to determine their reasonableness and applicability; Investigation and analysis of the business management organization and financial structure of public utilities in connection with licensing or regulatory actions; and Purchase or sale by BPA of utility resources and services
- Electronic and Electrical Engineer (includes PSC/SPC Field Engineers)
- HR Specialist
- Substation Operator. Training for this position is extensive, requiring a 3.5 year internal training program, and even journey level recruits require at least 18 months in training.
- Senior Executive Service
- Managers
- Risk Analyst, i.e. experience in using structured risk assessments to identify and analyze a variety of potential of enterprise risks.

Northwestern Energy

Primarily service and maintenance in our area. Not anticipated to have high growth or substantial change in numbers of workforce. No current job listings on web site. Workforce needs primarily will be concentrated in replacement for retiring lineman. *Western Montana's In Business Monthly* reports that Northwestern Energy's Mike O'Neill estimates that linemen will be needed at a graduating rate of 50 per year for the next 10 years to fill gaps at the current rate of retirement. This resulted in the development of the lineman program at MT Tech. The Montana Tech lineman pre-application states that this program "was developed in response to a nation-wide shortage of skilled line workers. A recent survey of the Montana utility industry indicates that there will be a significant need (40-50 new apprentice positions per year) for individuals holding skills offered by this training for at least the next decade, and the industry expects that this trend will continue for the foreseeable future." The program started in 2007 was initiated by Northwestern Energy when they realized that upcoming retirements would result in leave a skill gap in the transmission field.

Flathead Electric Cooperative

Current and projected shortages are in lineman and engineer positions. They currently have an in house training and development apprenticeship program for linemen. Stephanie Wallace from Human Resources indicated that they are fortunate to live in an area that can attract linemen from other areas so that has helped their recruitment. FEC is coordinating with the universities to promote engineering internships leading to employment.

7. Find a success story and be prepared to tell us about it.

ESTEC -- Energy Systems Technology Education Center -- Created through National Science Foundation grant to Idaho State University, will be incorporated into MSU campuses in MT and Little Big Horn College at Crow. Their mission is to "cultivate the people, educational resources and applied research capabilities necessary to improve the local, regional and national availability of trained workers in support of the construction, operation, and maintenance of current and future energy facilities and occupations." The project demonstrates unique collaboration with numerous entities giving financial and technical resources. These include business, community groups, education, state agencies, economic development organizations and tribal agencies. The program includes capacity building (math, science, etc. curriculum) at the six other tribal colleges in MT).

http://isu.edu/estec/

The **Montana Tech lineman program** is one such success story where government, education, and business partners joined forces to meet a workforce need. Click on the following link to read about the program, its establishment and it cooperators.

http://mtinbusiness.com/inbiz-0801/bus08.php

BPA: In early December, BPA signed power sales contracts with its customers that will ensure the Pacific Northwest has access to the nation's lowest-cost, emissions-free electricity for at least the next 20 years. Signing contracts now gives utilities a clear signal about what power they can expect from BPA over the next 20 years and what they need to acquire themselves to meet growing population and commercial/industrial needs in the future. The availability of low-cost electricity has always been a cornerstone of the region's economy, and its continued adequacy is critical to spurring much needed economic expansion.

While the Pacific Northwest, with its hydropower base, already has the cleanest electricity in the nation, the new contracts have been designed to facilitate further development of energy efficiency and renewable power. Utilities will not lose any access to low-cost federal power if they invest in conservation resources. The contracts also promote regional resource adequacy and encourage development of electric infrastructure in the region.

Resources:

http://www.deq.state.mt.us/energy/geothermal/sites.asp

http://www.workforceflorida.com/banner_center_energy.htm

http://hotjobs.yahoo.com/career-articles-the_new_power_jobs-449

http://www.pseg.com/media_center/pressreleases/articles/2008/2008-06-27.jsp

http://www.cewd.org/media/pdf/cipreport_nov2006.pdf

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Montana's Regional Innovation Grant (RIG)
Core Leadership Group

Exploring Forestry Based Products and Forest Stewardship Industry Cluster in Western Montana

"Responsible utilization and management of natural resources is a critical component of society's ability to exist and prosper. Working landscapes successfully balance economic, social, and ecological priorities. In rural places, working landscapes are often the primary source of jobs and income" - Sustainable Northwest

RIG Committee Members:

- Paul Uken
- Chad DeLong
- Charlie Wright
- Jennifer Nelson
- Tracy McIntyre

1. **What entities make up this industry cluster in Western Montana?**

Western Montana Forestry Based Products and Forest Stewardship Industry has a multitude of layers that interact and support each other. The "Montana Timber Industry Focus Report" has developed a list of NAICS industries that are included in the Forestry Based Products and Forest Stewardship Industry Cluster.

Timber Tract Operations	*Forest Nursery and gathering forest products*
Logging	*Support activities for forestry*
Sawmills	*Wood Preservation*
Hardwood veneer and plywood manufacturing	*Softwood veneer and plywood manufacturing*
Engineered wood member manufacturing	*Truss manufacturing*
Reconstituted wood product manufacturing	*Cut stock, resawing lumber, and planning*
Other millwork, including flooring	*Wood container and pallet manufacturing*
Prefabricated wood building manufacturing	*Miscellaneous wood product manufacturing*
Paperboard mills	*Corrugated and solid fiber box manufacturing*
Coated and laminate packaging materials manufacturing	*Sanitary paper product manufacturing*
Sawmill and woodworking machinery	*Wood kitchen cabinet and countertop*

	manufacturing
Upholstered household furniture manufacturing	*Non-upholstered wood household furniture manufacturing*
Institutional furniture manufacturing	*Wood office furniture manufacturing*
Custom architectural wood work and millwork	*Showcases, partitions, shelving, and lockers*
Lumber and wood merchant wholesalers	*Wood window and door manufacturing*

In addition to the above information the Committee defined the following as critical entities for the Forestry Based Products:

- *Mills: saw, ply, med-density, portable and paper*
- *Loggers: companies, Montana Logging Association, gypo-independent, log haulers,*
  **** NOTE: Montana Logging Association has over 700 members*
- *Value-added production: log homes, post & poles, furniture, spec beams, pellets, alternative energy (i.e. biomass and ethnol development), wood shavings*
- *Supporting Industries: equipment, part stores, fuel dealers, trucking firms, financial institutions, utilities company*

Another aspect to this cluster is focused on the Forestry Stewardship portion. Though many of the above industries straddle between production and stewardship and there really isn't one without the other the there are forest opportunities separate from Forestry Based production. The following are examples of some of the work being done under Forestry Stewardship that is not directly related to the manufacture of wood based products.

- *Noxious Weed control*
- *Brushing and maintenance work of trails*
- *Riparian conifer planting and maintenance*
- *Stream reconstruction*
- *Decommissioning, Restructuring, Maintenance, Storm-proofing of Roads*
- *Treating existing slash piles*

It is also important to note that the Forestry Related Industries and Clusters impact Western Montana's Tourism industry. Western Montana's tourism industry is based on having access to the forest for hiking, biking, snowmobiling, cross country skiing and snowshoeing, recreational driving, viewing wildlife, fishing, berry picking, hunting and outfitting etc.

With this, the Committee recognizes that if the Forestry Related industries/cluster continues to decline there will be a direct negative impact on the following industries:

- *Utility Companies*
- *Entertainment services*
- *Tourism related industries*
- *Fuel and Vehicle based services*
- *Value-added production lines*
- *Financial institutions*

For the purpose of this paper we have identified the following businesses that are directly involved in Forest Based Production. Please note that this list is not a complete list of every forestry/timber based business in Western Montana. It is the intention of the Committee to continue to identify and include as needed.

- *FH Stoltze Land and Lumber Co; Columbia Falls*
- *Plum Creek Timber Company; Columbia Falls, Pablo, Fortine, Evergreen (Kalispell)*
- *Pyramid Mountain Lumber Co; Seeley Lake*
- *Smurfit-Stone Container Corp; French Town*
- *Sun Mountain Lumber Company; Drummond*
- *Chapel Cedar; Troy*
- *Four Corners Pine, LLC; Trout Creek*
- *Marks Lumber; Clancy*
- *Marks-Miller Post & Pole, Inc; Clancy*
- *Montana Timberline Firewood Co; Kalispell*
- *Rocky Mountain Log Homes and Lumber Co; Hamilton*
- *Simpson Lumber Co; Kalispell*
- *Thompson River Lumber; Thompson Falls*
- *Tricon Lumber LLC; St. Regis*
- *LuckEG Post and Pole; Libby*
- *Eureka Pellet Mill-Montana Renewable Resources; Eureka*
- *Montana Woodworks; Rexford*
- *Gwynn Lumber; Eureka*
- *RBM Lumber; Columbia Falls*
- *Hunts Timbers, Inc.; St. Ignatius*
- *Johnson Brothers; Olney*
- *Tobacco Valley Lumber Co; Kalispell*
- *Glacier Creek Logging and Lumber; Condron*
- *Western Building Centers; 7 County Region*
- *Roseburg Industries; Missoula*

This list does not include all the logging companies and the other secondary/supporting companies that are involved in the Forestry Based Products and Forest Stewardship Cluster.

2. **What are the high impact organizations within the cluster and where are they located? Draw a map that helps us have some sense of the region?**
    - *All the businesses listed above- map is attached*

We have identified that the following organizations also play a role in the cluster of Forestry as well as provide critical employment and workforce needs. Again, we acknowledge that this list is incomplete and open to additions as identified.

- *USFS-Regional Office: Missoula*
- *Montana State DNRC*
- *University of Montana-School of Forestry: Missoula*
- *Flathead Valley Community College- Logging Team: Kalispell*
- *Montana Logging Association; Montana Forest Owners Association*
- *Montana Wood Products; Montana Forest Council*
- *Restore Montana: Missoula*
- *Northwest Connections: Missoula and Seeley-Swan*
- *Montana Tree Farm*
- *Society of American Foresters*
- *Sustainable Northwest and Rural Voices for Conservation Coalition: Portland, Oregon*
- *Missoula Area Economic Development Corp: Missoula*
- *Montana Dept. of Commerce Regional Development Office: Missoula*
- *Montana West Economic Development: Kalispell*
- *Northwest Economic Development District*
- *Bitterroot Economic Development District*
- *Eureka Rural Development Partners; Eureka*
- *Montana Community Development Corporation*
- *Montana Forest Restoration Committee*
- *Sierra Club; The Nature Conservancy*
- *Rocky Mountain Elk Foundation; The Wilderness Society*
- *MT Dept. of Fish, Wildlife and Parks*
- *Montana Wilderness Association*
- *WildWest Institute; Missoula*
- *Kootenai River Development Council; Libby*
- *National Network of Forest Practitioners*
- *Provider Pals; Libby*
- *Swan Ecosystem; Condron*
- *Yaak Valley Forest Council; Yaak/Troy*
- *Kootenai Salish Tribe*
- *MSU Extension Offices: Mineral, Lincoln, Lake, Sanders, Missoula, Flathead*
- *Montana Legacy Project; the Trust for Public Lands*
- *Community Forest and Open Space Conservation Program*
- *County Commissioners and RAC committees*
- *Local Chambers of Commerce*

3. **From the perspective of entities involved, what are the conditions of the industry now and why? From their perspective, what realistic growth opportunities exist?**

Northwest Montana's Forest based production is in a critical decline that is directly related to the downturns in construction and housing components of the national economy. The industry historically experiences larger business cycle swings. The demand and price for finished products rises and falls with the rise and falls of the home starts. The other factor in the decline of the industry is the availability and ability to harvest raw materials. The federal and state governments, through continued environmental pressures, have drastically changed their process in removing timber.

A key point regarding the Forest Related Industries is that they are historically a reactive industry. Our committee recognizes the need for Forest Related cluster industries to move into a more proactive stance in order to sustain.

As of December 2008, the wood products market is in very poor condition. The sub-prime mortgage crisis and the subsequent recession have the real estate market flooded with homes, foreclosures and tight loan requirements. Housing starts nationally are at a 25 year low and as a result there is little current market in the United States. Poor economic conditions in the United States and falling value of the dollar on the international markets have resulted global economic slowdown, resulting in a slowdown also in the export of timber. Although the dollar has gained some strength internationally, it is primarily due to weakening of other currencies, and not to any real financial stability in the American market.

The economic crisis comes on the heels of several years of timber market downturn. Current national policies that control the federal wood supply have had a significant negative effect on the timber industry in western Montana where federal land ownership makes up most of the 16 million acres of federal land in the State. Without a steady, reliable source of timber to feed mills many companies, especially small companies have struggled to continue operations and many have failed. These conditions have lead to temporary closures and layoff for some mills.

Imports of wood products, particularly from Canada have also played a part in the effect on the forest products industry in western Montana. Most Canadian forestlands are provincially held Crown lands (77%), each with an annual allowable cut. This annual production is not, generally, interrupted by injunctions and lawsuits as are timber sales on public land in the US. This policy difference and our timber trade agreements with Canada have helped provide a steadier flow of wood to the mills, but it has negative impacted US-based logging companies because their skills are not needed.

From their perspective, what realistic growth opportunities exist?

Biomass power generation: *Mills with biomass or co-generation plants will continue to generate part of their own power in the future. Although estimates of biomass availability indicate that sources are numerous, biomass fuels are not likely to be economically viable with current technology due to costs incurred in handling and transporting individual small wood pieces. If harvested with larger wood that has timber value, removal of small wood becomes more feasible. Currently, it is when mills can use their own wood waste that biomass energy production is most feasible. Pellet production is a growing industry. Pellet fuels are up 25% nationally from 2005 to 2007, however available feedstock in dependent on mill production and waste wood generation.*

There is a need for better technology to reduce handling costs and remove small wood from the forest and this will increase the viability of biomass energy production. Expected increases in electrical costs will also make biomass power production more feasible in time. Hazardous fuel reduction costs can be offset by the removal and utilization of small trees and slash, but this risk reduction is difficult to quantify.
Barriers to feasibility – current small wood removal costs exceed monetary returns of power generation, i.e harvesting, removal, transportation, sorting, processing
Impetus to overcome barriers – renewable energy mandates, increasing electrical costs, BPA electrical caps and increasing population growth.

Biofuels: *Global production of biofuels is increasing annually, at equivalent of 300,000 barrels per day and current production levels are expected to triple in the next decade. When cellulosic ethanol production becomes economically feasible, demand for woody materials will increase. This increase could create market shortages for raw materials for lumber production. Methods to increase the amount of ethanol produced from a specific amount of wood are being developed, and cellulosic ethanol holds greater promise than currently used feedstock supplies, i.e corn.*
Barriers to feasibility – technology is in developmental stage and current small wood removal costs exceed monetary returns of production i.e harvesting, removal, transportation, sorting, processing; current low petroleum prices
Impetus to overcome barriers – renewable energy mandates, increasing electrical costs, national mandate to reduce reliance on foreign oil.

Industrial chemicals: *Extraction processes associated with biofuels will result in valuable byproducts that are currently manufactured in other countries, or are currently produced from petroleum.*
Barriers to feasibility – technology for biofuel is in developmental stage

Impetus to overcome barriers – renewable energy mandates, national mandate to reduce reliance on foreign oil.

Green building products: *Annual U.S. market of green building products and services is $7 billion in 2005, $12 billion in 2007 and is projected to reach $60 billion by 2010. Western Montana should be able to garner a portion of this market. By linking wood product production with good forest management and stewardship, incorporating principles of carbon sequestration, and small diameter wood use western Montana could be identified with "green" building products. Current infrastructure could be used to produce products in an environmentally sound way.*

Barriers to feasibility – local perceptions of green products, economic condition, supply and demand

Impetus to overcome barriers – social interest in green products, i.e marketing power, value added use of small diameter material, carbon sequestration

Carbon sequestering*: While currently a voluntary market, the US carbon market is gaining momentum and may represent a significant opportunity in the future. If regulation of carbon emissions is made mandatory as it is in some parts of the world and the cap and trade system is implemented, carbon credits could represent a significant industry in western Montana. Tied to forest stewardship and wood products, carbon credits could offset costs associated with reforestation, create revenue and provide funding for other environmental or stewardship projects.*

4. What infrastructure is critical to this industry cluster as it moves forward?

The Forestry Based Products is dependent on a variety of infrastructure, both public and private. As the Missoula Area Economic Development Corporation completed their evaluation and recommendation in the Montana Wood Products Industry Initiative, they highlighted the critical components needed to keep the remaining manufacturing facilities open and accessible. The manufacturing facilities involves sawmill type operations as well as the value added and less traditional systems.

Transportation also plays a vital role in the future of the Montana Forest Based Production. Weight restrictions on roads are severely handicapping the Forest Based production industry, as the loggers have difficulties moving the materials they harvest during the winter months, when it is environmentally sound to do so. Collaboration efforts are making head way in bridging interests groups and understanding forest health. However, many sales are restricted to winter logging and during the annual thaw many roads are closed to weights. This weight issues also affects all sub-industries as well.

The following infrastructure is needed to retain and expand the forest products industry in the state.

- *These include the remaining manufacturing facilities: sawmills for dimensional lumber that utilize both large and small logs; pulp mills for paper manufacturing which use clean, non-saw material; plants for the manufacturing of medium density fiberboard or MDF that use clean chips; pellet mills which use clean chips and/or sawdust; finger jointer facilities that use milled ends and pieces, boiler systems which utilize hog fuel or coarse waste wood material and kilns and dryers for removing moisture from wood products.*

- *The existing railroad system needs to be upgraded and expanded to provide cheaper, reliable transportation between rural wood producing regions, manufacturing facilities and urban markets. Existing rail sidings need to be maintained and new sidings developed. Primary and secondary haul routes need to be constructed and maintained to a level that permits safe and efficient travel at GMV weights allowed by truck and trailer manufactures. Designate truck routes to mills that reduce obstacles and increase safety for truck drivers and the public.*

- *Infrastructure needed for developing newer forest products industries including ethanol plants, including labs for bacteria and enzyme culturing, and bulk and blending facilities; efficient boilers with scrubbers or CO2 capture technology and turbines for biomass power generation, additional power transmission lines and substations, wastewater treatment plants and upgraded water systems. Development of new technology and efficient equipment is needed for cutting, gathering, transporting, sorting and processing small diameter trees and downed debris.*

- *Retention of existing or development of new tree nurseries or greenhouses will be needed to supply seedlings for reforestation projects. Cone collecting and extracting equipment will be needed.*

- *Research and development facilities will need to be upgraded to provide scientific support to new forest products and challenges.*

There is also a need for Forest based production companies and service providers to connect. With the continued decline in material availability it extremely important that businesses build upon one another. The concept is similar to the Elk City's Framing our Communities Business Incubator Program, where they have wood production businesses utilizing each other's "waste" materials to produce another product. Please review the attached story to learn more about the project in Elk City and their goals/successes.

5. **Generally, what is the current skill sets employed in this industry? What skills/talents are needed to move the industry forward?**

Current Skills

Foresters – procurement/prescription/silvicultural/presale/reforestation, Engineers – civil, road, logging, safety Environmental planner – pre-logging and restoration

Wildlife and fish biologists, hydrologists, botanists, cultural resources specialists

Timber marking and layout crews, surveyors, GIS mapping specialists, tree planters, cone collectors, survey and monitoring crews, slashing crews, loggers, truckers, equipment operators – logging and restoration operations, scalers, mechanics, millwrights, boiler operators, welders, fabricators, electricians, market analysts, market development, Research and Development, economists, human resources, safety officers, purchasing agents, resource clerks, accounting staff, secretaries, office managers, maintenance, receptionists

Future Skills - *as above plus - Chemical and industrial engineers, soil conservationists, soil scientists, environmental scientists and engineers, microbiologists, chemists, restoration specialists, noxious weed specialists, forest geneticists, forest product and environmental designers, wood technologists, onsite and offsite quality control specialists, water purification specialists, wastewater operators/management, more forest laborers*

It is important to also acknowledge that the current forestry related workforce is an aging demographic. One of the gaps identified below is related to the desire to connect younger generations to the woods and the career opportunities; both traditional and emerging opportunities.

6. **In an overall sense, what "gaps" do you see regarding this industry cluster and what ideas do you have about bridging those gaps?**

Gap 1 *- There is a "gap" between available resource and supply needs. The resource is there, but is essentially unavailable. This issue has been at the heart of the forest products demise in western Montana. Most of the forested land in the area is U.S. Forest Service and subject to national policy, specifically the National Environmental Policy Act (NEPA). Local and regional economics have been strongly affected by the outcomes of agency decisions, the lengthy appeal process and litigations. The process that was intended to protect resources has dissolved into controversy, stalemate and ultimately neglect of forest resources.*

Gap 2 *– There is a gap between forest policy, energy mandates, and economic feasibility. Through the Health Forest Restoration Act of 2003, some of the opposition to forest management has been reduced, as most people support protection of homes from wildfire in the wildland urban interface. However, the material removed from these areas is primarily small diameter wood with limited, little or no current timber value. Policies and mandates need to be reviewed and determined if they are still appropriate or feasible.*

Gap 3 *- Technologies and markets need to be developed that can utilize this material and offer an economic return. If cellulosic ethanol technology was more advanced and developers were able to show economic feasibility of this type of ethanol production, then forest mechanization technology would follow. But development of specialized equipment is expensive and risky, as is purchase of new equipment for logging companies. Money needs to be made available for equipment development, and for logging entrepreneurs.*

Gap 4 *– Current transportation of forest products is expensive and antiquated. Loss of local mills has resulted in long haul distances to get the raw forest material to processing sites. For example, instead of a driver making four trips to a local mill per day, he now can only make two trips to the regional mill per day. If he is paid per load, his pay has been cut in half. If he is paid per hour or mile, the contractor paying the driver's wages is paying more to get the logs to the mill for the same load of logs. Highway use taxes are high, insurance is high, fuel and the associated fuel taxes are high, more miles on trucks result in greater wear and depreciation reducing the value of the equipment and increasing maintenance costs for the same load of logs. Regularly serviced railroad sidings need to be established at key locations to move products, this is especially true for smaller diameter wood products that require a lot of handling and have a marginal economic return. Better transportation would improve the economics of using small diameter wood, and moving finished wood products from the processing areas to marketing areas. Government needs to develop new rail system and encourage rail companies assist community development by offering incentives.*

Gap 5 *– Restoration work must have funding either through economic return from forest products or from government programs funded through taxes. Valuation of products needs to reflect costs.*

Gap 6 *– Values for clean water, air, forest carbon sequestration, forest aesthetics, etc. have not been quantify making environmental stewardship economics difficult to establish. Establish some guidelines.*

Gap 7 *– Making long term stewardship of corporate forest lands part of a corporation's bottom line. Offer incentives, bear the burden legislation.*

Gap 8 *– Means to keep corporate timberlands in the timber land base, i.e. Plum Creek's real estate divestiture. This may become very important in the carbon sequestration issue. Offer incentives, historical use or bear the burden legislation.*

Gap 9 *– Loss of traditional mill operations skills, logging skills, environmental awareness, i.e. an equipment operator knowing by ground indicators (plants, topography, etc) that an area may have subsurface water, and thereby avoiding the area. Keeping and training workforce on a less than guaranteed industry is difficult. Yet the need for skilled competent labor continues to grow as the industry changes to deal with a changing demand for wood products. Training, mentoring.*

The committee also identified the following areas:

- *International/global perspective and marketing*
- *Build Trust between all parties (government, environmental/conservation, industry, recreationists)-the industry needs show sustainable management*
- *Definitions of buzz words "Restoration", "Stewardship", "Collaboration vs. Consensus" "Healthy Working Forests" "Value-Added" "Sustainability"; and remove it from academic language to on the ground implementation*
- *Education- emerging technology and science…how does the logging community stay abreast of emerging information while trying to make ends meet-*
- *Forest fragmentation- instead of looking from on project to the next; encourage and empower whole watershed planning and implementation*
- *Disconnect of communities from the Forests- not understanding the ecology just seeing the results of a harvest- maybe provide resources to urban and rural areas to develop and link working forests and provide K-12 education- Kids in the Woods program- this may work in with the aging workforce-bring more interest into the younger generations.*

7. Find a success story and be prepared to tell us about it.

The family of Russ and Duane Vaagen of Vaagen Bros. Lumber Company of Chewelah, Washington has been in the sawmill business since the 1920's. While some 700 sawmills have closed in the West, Vaagen Bros have weathered the storm. Their recipe for survival is change and utilization. Back in the 1980's, they began experimenting with small wood material, after Duane visited mills in Scandinavia that utilized small diameter wood.

They found that small diameter wood that is grown in poor growing condition or suppressed condition often result in hard, dense wood due to the slow growth of the tree. Capitalizing on that slow growth, Vaagen Bros. produces lumber that is Machine Test Rated (MTR) and brings a premium price as it has been tested for strength. In addition to supplying a valuable product and creating jobs, removal of suppressed, small trees is a major component of hazardous fuel reduction and healthy forest treatments. Such treatments are needed on virtually hundreds of thousands of acres of forests in the West to reduce risk and/or effects of wildfire and reduce completion to improve forest health. This niche, good forest practices and a willingness to sit down with various environmental groups and other forest product producers as members of the Northeast Washington Forestry Coalition have helped create an atmosphere of trust and collaboration. The Northeast Washington Forestry Coalition is working with the Colville National Forest break the gridlock on several large forest projects that are in appeal or litigation. Fuel reduction work is one of the areas that most entities in the group can agree needs to be addressed. This has allowed several of the projects to move forward on the Colville N.F.

In addition, to their specialized lumber, Vaagen Bros. utilization of wood includes using planed ends, pieces and miss cuts in their finger jointer to be remanufactured into usable lumber, wood waste (hog fuel) to fire their 4.6 MW co-generation plant, whole log chipping of otherwise unusable logs and clean bark for landscaping. Other products and by-products are sold on the open market including logs that don't meet Vaagen Bros criteria for lumber, clean chips to pulp mills in Idaho and British Columbia, sawdust and shavings to fuel pellets manufacturers in Washington and Idaho, and surplus hog fuel to Avista Corporation for their co-generation plant in Kettle Falls, WA for electrical generation supplying the grid.

The Vaagen Bros website sums up their dedication to their business, their community and good forestry "We feel it is important to operate in such a way that honors the community and its residents. This is one of the many reason we feel it is important to manage the timberlands in such a way that those who live here can be proud of the way that it looks for years to come."

Sources: Vaagen Bros website http://www.vaagenbros.com
Sierra Forest Legacy website
http://www.sierraforestlegacy.org/CF_BiomassSmallDiameterWood/CSE_VaagenBrothers.php
Timberline Magazine website

Montana Regional Innovation Grant

Core Leadership Group
Industry Cluster "White Paper"
Restoration/Remediation Cluster

This group chose to look specifically at the Build Environment, Natural Resources and Roads, Bridges, Water/Sewer as a possible Restoration Industry Cluster. Based on the suggested outline from the facilitators, the following is the result of our research.

Crucial Entities

Several entities will be required to participate to create a successful industry cluster. Our research indicates that involvement will reach across the private sector to state and local government, down to individual citizens and neighborhoods. Municipal Public Works, State DOT, in-state and out-of-state contractors, Mills, Foresters, Loggers, Watershed Restoration Firms, Engineering firms, Architects, Environmental Firms, Specialized Labor, Non-profits, Educators, Universities and Colleges, Tribal Governments, Consultants, Neighborhoods and Concerned Citizens, are some of the most crucial entities needed.

High Impact Organizations

Specifically, some high impact organizations will be: Tricon Mill, Pyramid Lumber, Smurfit Stone, Envirocon, Tetra Tech, Salish-Kootenai Tribe, MCS Environmental, University of Montana, Flathead Valley Community College, Salish Kootenai College, PBSJ, The Nature Conservancy, Municipal Public Works, Dept of Transportation, US Green Building Council, Missoula Downtown Association, Urban Renewal Districts.

Condition of the Industry

Currently Restoration in the Build Environment appears to be an emerging thing. Based on the research done, it appears that there are several plans in the works, but that work has yet to begin. One of the best examples of this is the Greater Missoula Downtown Master Plan which incorporates many green building ideas and historic preservation. The planned revitalization will require not only green building practices but infrastructure improvements and remediation of water, sewer, upgrading roads and bridges.

The Natural Resource Restoration Industry cluster is composed of many different types of businesses and organizations, making it somewhat difficult to give an overall condition of the industry. In fact, because restoration jobs aren't tracked as such, it's quite difficult to even assess the current restoration economy though there is a current effort within Montana's Department of Labor and Office of Restoration to work on this. However, we do know that across Montana there is a high level of need in all sectors, including forest and watershed (stream, riparian) restoration, agricultural land restoration, mine reclamation and dam removal. Based on interviews with several environmental consultants in western Montana, it appears that environmental consulting companies are increasing in number every year. Along with that increase is a greater need for a trained workforce to carry out the restoration work. However, all of these sectors are affected by lack of funding, regulatory obstacles and/or lack of ability to sell the by-products of restoration (timber).

Currently, the timber market is severely depressed, in large part due to low housing starts and the overall national economic downturn. This has put a real strain on Montana's timber mills and logging operations. At the same time, the need for restoration forestry and forest thinning is great due in part to past management activities and fire suppression. This leads us to the question – what do we do with small diameter trees when there is little to no market right now for studs or other traditional wood products? This question can lead to innovation in the market, including various types of small biomass facilities, specialty wood products, and construction out of small diameter logs, just to name a few alternative uses.

Other aspects of forest and watershed restoration work, including weed treatment, road decommissioning, culvert work, stream and riparian work and revegetation are in high demand but often lack the needed funding. The same holds true for mine reclamation. Aside from funding, another obstacle to needed work are the regulatory and policy constraints that often make it difficult for companies, particularly small or new companies, to take on restoration projects. These will be discussed in more detail below.

Finally, the purchase of Plum Creek lands by the Nature Conservancy and the Trust for Public Lands also provides a lot of opportunity for the restoration industry. There will continue to be timber harvest from these lands, but there will also be restoration needs including road and weed work. Because many of these lands will in turn be purchased by the state and the U.S. Forest Service, coordination between public and private entities will be essential in assuring that this restoration work goes to Montana companies and workers. The growth opportunities in the natural resource restoration industry abound. Restoration is a new industry cluster and thus ripe for new technologies and innovation. With every restoration project we learn how to do this work more effectively. With our educational system, multitude of restoration projects and government support of the restoration economy, Montana can be a national and international leader in restoration research, technologies and on-the-ground application.

Critical Infrastructure

The infrastructure needed for the Natural Resources Restoration industry to thrive includes, but is not limited to: mills, biomass facilities, people with skill sets to do the work, good transportation system, good communication system, business incubators to help promote innovation and entrepreneurs, a strong educational system, and leadership from the public and private sectors.

Much of the restoration or remediation of Water, Sewer, Roads and Bridges actually would qualify as infrastructure in and of itself. In order for any long term or large scale remediation or restoration to take place, roads will need to improved and maintained; sewer will need to be upgraded to handle the increase of workers and the inevitable increase in population.

The Build Environment is similarly dependent on good roads and public works to become a successful piece of the industry cluster.

Current/Required Skill Sets

Because the restoration field is so diverse, the skill sets run the gamut from tree planters to heavy equipment operators to ecologists and engineers and administrative staff. While

the following is a list of current skills required, it is necessary to understand that if the industry cluster moves from theory to reality that there will be an increased need for these skilled people.
Ecologists (restoration, wetlands, riparian), Biologists (fisheries, wildlife, botanists, weed specialists, etc), Hydrologists, Engineers, GIS and Mapping, Foresters, Soil scientists, Heavy equipment operators, Loggers, Tree Planters, Restoration Technicians, Planners, Landscape architects, Clerical (permitting, proposal writing, bookkeeping), Engineers, Construction, Electrical, Concrete, Specialized Labor, specific Green Building Consultants.

Gaps in the Industry Cluster
Better leadership within government and the private sector on restoration issues – leaders and workers who have a holistic perspective of landscape issues and socioeconomic considerations. The business side of the natural resource restoration economy is growing but lacks good coordination and direction at all levels. People (and institutions) who can integrate the socioeconomic considerations of restoration with the ecological ones. There needs to be a broader public understanding of how community health and natural resource health are so closely tied. Restoration ecologists who understand the big picture, Entrepreneurs; entities, perhaps through the non-profit sector, who can promote and improve Montana's restoration economy through such components as education and marketing.
Since public works/infrastructure activities require such specialized workers and large scale projects many out-of-state contractors bid and win contracts for million dollar-plus projects in Montana. Part of the problem lies with how the state defines bonding ability, which ultimately makes it harder for local contractors to win large-scales projects. While municipal public works entities try to divide projects into smaller entities allowing local contractors to get in on the work, they believe it would benefit local companies if the state would broaden the work environment and make bonding availability easier to obtain for local contractors. Another gaps is engaging the public more in public works projects. Without public input, many plans have ultimately met with little success. The biggest gap of all is certainly funding. It seems certain that many entities within this industry cluster are collectively holding their breath, waiting for the new administration to make good on its promise of infrastructure funding.
With the Build Environment a considerable gap is the initial increased cost of building green. Due to the often increased costs initially associated with building green, and the issues this region has regarding affordability, it would be important that state and local governments recognize the long term benefit with monetary assistance. During the 2009 Legislative Session, the Montana Builders Industry Association is pursuing legislation for a green building tax credit. This would help to offset the additional cost to builders and homeowners hoping to "go green." It could also help to spur the industry if housing trust fund monies can be appropriated at retrofitting older buildings with green features to help keep energy costs low. One other barrier that must be considered for any consultant based in the seven county region is the inadequate availability of affordable air carriers. If this problem could be remedied in just one of the cities in this region it would help to promote this type of Build industry.

REGIONAL INNOVATION GRANT
Montana Department of Labor & Industry

Industry Cluster—Health Care

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REGIONAL INNOVATION GRANT
Montana Department of Labor & Industry
Industry Cluster—Health Care

The RIG committee offering pertinent information toward health care in Montana and specifically in Western Montana identifies the health care cluster in Western Montana to include hospitals (of varying sizes and capacity), doctors' offices and health care clinics, long-term care facilities, residential care facilities, in-home health care, medical suppliers, pharmaceutical manufacturers, education and training institutions, community management teams, and related professional organizations. The National Consortium on Health Science and Technology Education further identifies the health care cluster as career paths which are associated with health care. For purposes of this report the type of organization rather than the career paths represents the 'cluster'. We also recognize the 'health care industry' to include many more organizations than identified here.

High Impact Organizations in the health care cluster include hospitals in high population areas such as Kalispell Regional Medical Center in Flathead County, Community Medical Center and St. Patrick Hospital. Marcus Daly Memorial Hospital in the Bitterroot Valley while a 'smaller' organization when compared to the other medical centers in Western Montana is noted for their programs related to their retention and education of employees. Community Management Teams in each of the western Montana communities represent one example of an active, successful collaboration of organizations and people that will be integral to the movement of going forward in the health care environment. Educational organizations identified within this 'cluster' of Western Montana include Flathead High Schools, Flathead Valley Community College, The University of Montana and The University of Montana College of Technology, The Missoula County Public Schools Life Long Learning Center, and Salish Kootenai College. The research and health care organization, GlaxoSmithKlein's impact on employment and training and education initiatives within health care in Montana and specifically Western Montana.

Professional organizations included in our identified health care cluster are those such as the Montana Hospital Association, the Montana Association of Health Care Providers, Western Montana Health Care & Workforce Alliance, Montana Rural Health Association, and Montana Health Occupation Students of America. Further Montana has through the Board of Regents identified a Montana Healthcare Workforce Advisory Committee (MHWAC). Within each primary professional association there are a host of professional organizations which provide health care professionals with information, opportunities for training, and professional growth and alliances. Each of the professional organizations concentrates on or has an active component of workforce development through education. Regulatory boards in the state of Montana such as the Board of Nursing and the Board of Radiologic Technology can be identified as professional organizations within the health care cluster as we have defined it.

The Condition of the Health Care Industry

The publication Montana InBusiness in a 2007 volume described the 'condition' of the health care industry as being impacted by the rising costs of health care in Montana and the rest of the nation. Rising costs represent a 'challenge' for both health consumers and health providers. Health care reform, then, seems to be the heading under which change is active in Montana. The Governor of Montana, Brian Schweitzer, and Montana Senator Max Baucus are champions of the change in Montana and are working in collaboration with health care professionals. Governor Schweitzer's Blue Ribbon Task Force in 2002 identified a number of issues still being addressed today. Lawmakers such as Max Baucus are taking forward such initiatives as the most current move toward policy for health insurance coverage for all in his Call to Action—Health Insurance for All initiative.

Other conditions of the health care industry which are true in the nation but certainly in Montana and specifically Western Montana are identified as:

- Lack of availability of well-trained, locally accessible professionals which is further impacted by global competition for those individuals. The availability of such professionals is impacted in Montana and certainly rural areas in Montana by the competiveness of pay for these individuals which means something more needs to draw professionals to this area. Beyond even the draw is the need for retention programs designed for long term retention of these professionals.

- Need for education and training programs to change curriculum to provide increased orientation to health care in rural areas. Additionally, the curriculum should require a practicum in 'rural' health institutions—a rotation in 'rural' health just as there is a rotation in 'pediatrics' for nursing students. Providing such components will lead to individuals not only more prepared for 'rural' environments in health care in Montana but an understanding of the required next steps in this industry to continue to change the focus in the industry.

- Eastern Montana was first to actively use electronic media to conduct work and provide education both within individual health care institutions and in a coordinated, collaborative fashion between institutions. Western Montana is moving the direction of the eastern portion of the state with regard to incorporating, demanding, expecting, allocating resources for electronic communication resources. There remain gaps between institutions and people in Western Montana for this opportunity. As well, there remain gaps between the western and eastern Montana and the opportunity to communicate and collaborate. Such a gap is not necessarily a result of lack of desire or intent but rather lack of resources to facilitate obtaining and installing the necessary components toward such communication.

The condition of the industry is also represented by growth in specific consumer base or required function. The coming of the 'silver tsunami' (MT InBusiness) recognizes the growth of a specific population of health care consumers. The health care industry needs

to ready itself for and respond with health care services, systems of delivery, systems of initial education and training as well as continuing education and products which support the "aging" population ("baby boomers) in and coming in to Montana. This segment of the population will also impact health and fitness systems, preventative care systems, and access to them as well as impacting the expectations for long term care and what that looks likes now and in the future.

Health Care Industry Infrastructure

The following components were identified by the committee as components which were or would be critical to the infrastructure of the health care industry as it moves forward.

- Health Care Reform (Health Insurance availability for all individuals.)
- A state insurance plan which clearly identifies goals and solutions or support for reaching stated goals
- Development of or evolution of public policy which may support health insurance for all individuals, which may identify advantages for employers who support employees through systems of health care coverage, which may support health care institutions that collaborate with employers and individuals to provide desired care.
- Structures which provide quality care where the individual consumer is identified as the priority of the institution(s) rather than just more care a philosophy supported by prioritizing the financial well being of a health care institution over the consumer.
- Structures supporting technology which allow institutions to participate in the electronic communication systems that expand access to information and care through data and patient diagnosis and care information
- Policies defining and supporting systems which offer 'affordable' and 'accessible' care for individuals
- Systems which provide and promote preventive/staying healthy solutions for individuals
- Tax Credits available for individuals and institutions providing health care in rural areas
- Health care institution and educational institution leadership with insight and willingness to move forward; Boards of Directors and Advisory Boards will have high impact on the goals and outcomes of both the health care institutions and education institution by being proactive and responding to communities and individuals.
- Development of new access systems, support and upgrading of existing systems, and development of education programs which support using the available connectivity (information technology/telecommunication)
- Education and industry active partnerships and the development of or up dating of the 'workforce'.

The pipeline for increasing the prospective employee pool and responding to the shortage of health care workforce includes K-12 education system initiatives. One of those initiatives is identified through the awareness and skill training is being facilitated by the Health Occupation Student Association in Montana.

Continuing education of the current health care professionals can occur through collaboration between institutions and education professionals. A current need is for nurses to be trained in IV therapy based on a change in scope of practice for that segment of the health care workforce. Creating a training opportunity for nurses (both currently employed and seeking employment) is one way the health care institutions and Community Colleges/Colleges of Technology may partner toward the development of and retention of health care professionals. This opportunity is being offered in short time frame to respond to the demand required by law, meet the needs of the institution, the employees, and the consumer. Fees are determined by the educational professionals using a cost recovery model and are paid by the health care institution.

- Well coordinated credentialing and training in Montana - Well coordinated training and credentialing is a component of state wide structure which will impact Western Montana health care industry. A collaboration between the professional developing the knowledge base and skill sets (education), the governing board of education system (Board of Regents as an example), the governing board of the profession (Board of Nursing as an example) is not present and is critical to success of individuals. Individuals in these organizations, however, are actively pursuing systems of training, education, collaboration toward an outcome which is a well coordinated system. Such a system would be intended to serve not only western Montana but the whole of Montana and would be available/accessible to health care practitioners where they live.

- Clinical sites - A critical infrastructure component for the education of the workforce as entry level health care professionals and for those expanding or updating knowledge and skills is the 'clinical site'. The cry from the education professionals is for more clinical sites, allowing for more students to 'practice' in 'real' situations of health care; the cry from the communities is for an increased number of professionals aligned with health care; the cry from within the cooperating (and some not cooperating) institutions is for understanding regarding the reality of the institution census and the number of available patients and related experiences or support situation in which a 'student' could be involved. As well, current health care institution employees are the 'clinical site' experts and ultimately those who provide insight and oversight for the student. Responding to this critical need will require (and will not be accomplished without) collaboration between the individuals representing the institutions—health care and health care workforce educators and trainers. How can this be accomplished? Who will be involved and what will be required in resources in order to remain an active discussion in Western Montana? What will the 'new' experience rubric look like; what will the industry require, what will the consumer expect? To students who will be health care professionals, the skill development available through the clinical site experiences is required and essential to the next step of successful employment and retention. Because those clinical sites are currently limited in number and scope, this is a critical issue in health care. The conversations related to educational institutions responding to a workforce shortage will continue to look like no response until the partners determine how the development of skill sets can be accomplished in a different way or how the access to clinical sites is increased.

Health Care Professionals Required Skill Sets

Required skill sets which are identified with health care professionals include: clinical and related skills sets, communication skill sets as related to patients and professional teams within and outside the health care institutions, organizational skill sets, competence in caring for individuals from a diverse set of background (cultural and socioeconomic backgrounds for example), customer service skill sets and basic health informatics skills which will include health care professionals communicating with information technology professionals.

Maintaining and moving forward supporting skills sets includes developing systems of Continuing Education for health care professionals for purposes of keeping updated as individuals, for retaining employees, and for purposes of offering services to patients; identifying companion services which will allow initial training programs to recognize the opportunity for 'interdisciplinary' programming and the institutions to recognize 'interdisciplinary' or cross-training within institutions to support patient services and support employee retention; Recognition that health care givers need major updating to their body of knowledge every five years.

Gaps and Bridging the Gaps

Gaps in the health care industry which the committee has identified include the current capacity of education systems to deliver number and quality of health care professionals required, readily available and affordable continuing education for health care professionals, retention plans in place which support the health care professionals, and the state of telecommunication/electronic connectivity in the state of Montana,—not all institutions have access to electronic/telecommunications systems for communication purposes; and the systems may be different and may not be compatible even if available

One consideration which might bridge a gap in the shortage of health care professionals is as identified in the Policy Opportunity Snapshots document. Bridging this gap might include changing scopes of practice and related laws to expand the role and responsibility for patient care for health care professionals such as paramedics, physician's assistants, dental technicians to play a larger role in patient care.

Not all institutions—health care and educational—have access to electronic communication systems which are at the same capacity or compatible. The state and communities need to come together to determine needs, access, and cost of access (which will also include training individuals to use the electronic systems) and what it will take to accomplish access. The next step would be to identify benefactors who would provide the funding to put the base for communicating in place.

Successes

Whenever an in-depth look is undertaking into the ‘state’ of an industry as is the case here that which rises to the top for discussion and recognition purposes is often only the changes which need to be made to the system, the components of a system which aren’t working, and the dissatisfaction with whatever is current.

There are successes in western Montana health care which should be recognized. Making mammograms available to women in rural areas through a mobile unit is one of those successes. Teaching nursing in rural areas using a combination of electronic and face-to-face systems to increase the number of nurses available and to train the individuals where they live is another success.

There can be more and the successes will be notable and more public with systems of operation, delivery, and support of the health care professional and the health care consumer developed and maintained and accessible in rural areas and high population areas in Montana.

REGIONAL INNOVATION GRANT
Montana Department of Labor & Industry
Industry Cluster—Health Care

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REGIONAL INNOVATION GRANT
Montana Department of Labor & Industry

Industry Cluster—Technology

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Montana Regional Innovation Grant
White Paper

Industry Cluster: Technology

For the purpose of this project, the following definition will be applied to this industry cluster. **Technology:** ***Businesses relating to the research, development and/or distribution of technologically based goods and services. This sector contains businesses revolving around the manufacturing of electronics, creation of software, computers or products and services relating to information technology.***

In relation to this, the Telecom business is a huge and specialized portion of this industry. We have separated out Telecom for this report, and a separate white paper is being produced on that portion of the cluster.

Technology is a growing, vital and multi-faceted industry in Western Montana, encompassing a broad spectrum of business entities. Specific Western Montana industry within this cluster includes website development, software, coding and programming development, a wide variety of electronic manufacturing and support, product development, security systems, digital gaming, alternative energy development and technical services, computers, computer support and computer hardware, Internet and Telecom services, information technology (data mining), and data and media storage and recovery. In a somewhat different venue, other technology services include the hospitals of the region and higher education. These centers are continually utilizing new applications of software, computer services, data base management, internet, telecom and more. The high-tech needs of these facilities require daily interfacing with technology providers throughout the region.

Organizations in this cluster are located in throughout Western Montana, although they are concentrated in Missoula, Hamilton, Kalispell, and Whitefish. There is a technology industry presence in even the rural areas of this region. Technology businesses vary greatly in size in this region, from the sole proprietorship to the large corporation. Following is a sample list of Technology businesses through Western Montana, organized by county. In no way should this be considered a complete list, but rather a select representation of the greater business community of this industry cluster. Moving from north to south:

Lincoln County:
CMH Software; software development and support

Flathead County:
Creston Tech; web design
MC Squared Design; 3D computer generated models utilized for product design, inventions, prototype products, tooling and production design
SnowDog; web design and applications
Semitool; production of precision semiconductor manufacturing equipment

RadioActive; Computer service and upgrades, network installation and security, wireless networking installation and service, software, data backup solutions and recovery
Nomad; specialty integrated interoperable technological mobile platforms (vehicles). Quality mobile command facility design and development
Merlin Data Publishing Corp; data and search and retrieval software and tools, serving needs for investigative professionals
Avail Media; linear IPTV (internet protocol television) and Video On Demand (VOD) solutions, digital media
American Web; website design and website hosting
Zaneray Group; e-commerce solutions, design and information systems, custom software development
Sonju Industrial; component manufacturing for aerospace, defense, semiconductor, medical and commercial sectors
Byte Savvy; data protection and recovery, web design, video conferencing, computer problem resolution, training center
Torrent Technologies; insurance policy processing and claims administration system solutions and support
Corporate Technology Group; network and communication systems, internet applications, software and custom website applications
Superior Satellite Engineers; satellite access solutions, feed systems and antennas
Bancard; electronic banking and credit card solutions, ATM equipment and support
NXGen; payment processing services

Lake County:
Bigfork Web; website development, custom software development, database development, e-commerce solutions
Water Street; software design and support for the insurance industry
Paul Spade Computers; website design and development, programming and databases, e-commerce, hosting, web traffic analysis
Jore; design, manufacture and marketing of innovative power tool accessories
S&K Technologies; interactive electronic technical manuals, systems management, integration, installation and training, logistical support, web site design, development, maintenance and operations, web application development, internet management, software development, engineering, telecommunications, research and development, acquisition support, program management
S&K Global Solutions; Information Technology, technical writing, project management, telecommunications, engineering
S&K Aerospace; robotics research and development, software development, environmental project management, project waste management, project management, supply chain management, IT services
S&K Electronics; manufacturer of cable assemblies, wiring harnesses, electronic and electro-mechanical products for industry and government
DRS Technical Services; integrated products, services and support for defense technology. , including thermal imaging devices, combat display workstations, electronic sensor systems, power systems, and more.
Pure Altar Productions; website design

Websites in a Flash; website design
Dynamic Solutions; product development, technology applications, testing and implementation
High Tech Industrial; software development; mechanical design; manufacturing focused solutions; CNC machining; engineering and consulting services
Black Mountain Software; Software Development and support
Click Here Designs; website design

Sanders County:
Beaver Creek IT Consultants; website design, development and management, computer technical assistance, training, software, hardware, DSL installation and supports. Focus on cottage industries and ecommerce.
Computer Logic; customer personal computers and servers, networking and network connections

Missoula County:
Pyron Technologies; website development, IT solutions, technology management
Big Sky Commerce; payment processing solutions
Aquila Vision; Remote sensing, geographic information systems (GIS), communication technology, public safety solutions; mapping solutions; hyperspectral imagery
GCS; Geospatial information technology, solutions and networks (commerce, surveillance, communication, decision support, mapping, immersive 360 video, security)
Modwest; web hosting & management support, data center, software development, computerized efficiencies
Direct TV; digital television services
Cynical and Jaded Software; software and engineering system development and implementation, high tech marketing, market analysis, business planning & negotiation
Logistic Systems Inc.; public safety solutions, software development targeted for public safety agencies, data management solutions, integrated geographic information systems (GIS)
CTA Architects Engineers; Green Building, sustainable building practices, energy conservation and alternative energy design solutions, and our on-going training in sustainable design practices with a commitment to protecting the environment.
GT Solar; solar technology, manufacturing and photovoltaic equipment solutions. This includes multicrystalline growth technology, Directional Solidification System furnaces (producing silicon ingots) and reactors and hydrogenation units for closed-loop, environmentally friendly polysilicon systems.

Ravalli County:
GlaxoSmithKline; pharmaceutical development, research and production (biotechnology)
Rocky Mountain Laboratories; Biomedical research, pharmaceutical analysis, endocrinology, forensic testing, toxicology testing
Hamilton Computer Service; Custom-built computers, service and networks
Top-Down Computer Consultants; Computer System Designers and Consultants

Bitterroot Mobile Computing; Compuguy; Computer Service and Repair
Cybernet 1 Inc.; Internet Access
Quantix Inc; Software design and ticket sales

Schools and Research:
Intermountain Fire Sciences Lab
U of M College of Technology
Missoula Adult Education
U of M Computer Science
Flathead Valley Community College
Salish Kootenai College

The over-all condition of the technology industry appears to be fairly healthy and vibrant, particularly for diversified companies. When business has expanded to include multiple products or services, as well as a diverse market (national, global), indications are that there is more stability in the market base. A few of these businesses have recently experienced reduction in workforce. However, analysis would indicate that these businesses have a more focused and limited product line than others.

Web development and software development businesses by nature continually are working to build new solutions, new approaches and reach new markets. By that definition alone, they tend to perpetually re-create themselves. This in itself helps to fuel their economic growth. There are several web site development companies and software development companies in this area, and they appear to be doing fairly well. These companies tend to be relatively small, with often only one or two people employed. Software development ventures may hold more potential for company growth.

Business representatives from within this industry cluster report that the field is constantly evolving and extremely competitive. They relate that there will always be growth within this business segment because the goal of technology is to reduce costs, simplify tasks and most importantly, allow people to live where they want to live while still successfully conducting business. Networking out of the area for business is a constant theme for those specific entities which appear to be experiencing the most growth. There is good connectivity overall, and this is a very attractive place to run a technology related company due to the quality of life for employees. At the same time, compared to urban areas, there is a small population base here, and that may limit growth to a certain degree for those companies that utilize a large workforce.

Driving capital is the other factor which helps to determine growth in this industry. The businesses that were interviewed reported they found a short supply of investment and development capital available for businesses in Montana. Angel Fund and Montana Board of Investments (MBOI) have helped, but more is needed. There was concern that the Big Sky Trust Fund might be cut during this legislative session.

Web business growth is unlimited. Marketing and merchandising has become easier and online transactions are now more secure. A good deal of infrastructure is already in place, as fiber trunk lines have been laid and there is wide access to broadband Internet connections. As cost of hardware decreases and office equipment and networking protocols improve, businesses envision potentially extending local networks via the internet. Additionally, they anticipate that the internet may eventually be able to transfer data as fast as a local network, depending on the technology to reduce the size of data and increase bandwidth. The entrepreneur could benefit from this technology advancement, and it could help grow additional technology businesses in this region.

For small businesses, the use of technology in a community leads to expansion of use of technology. As technology is implemented in small towns and small businesses, the benefit is readily realized and many times exponential growth results. Growth is projected by local providers at more than 50% per year. While the local economy and job outlook may be somewhat sluggish, the use of technology provides a means for Western Montana residents to connect their specialty business to far reaching corners of the globe, effectively creating a market they could never otherwise access.

In regards to infrastructure, the technology industry relies on dependable and affordable internet connections, cell phone and telephone communications. Broad width band is critical for the ability to transfer large amounts of data effectively, and in a timely manner.

Network redundancy is critical and lacking in this region. There have recently been major disruptions of wide range telecommunication services created by small isolated incidents throughout the region. Last summer a line was cut in Pablo, disrupting service to an entire network. This fall a fiber optic cable was cut in Dayton, disrupting phone and internet service throughout northwest Montana for more than a day. In January 2009, snow and ice created breaks in two separate fiber optic lines simultaneously, creating phone and internet outages from Eureka to Kalispell for several days. Many businesses were dramatically affected by all of these events, with some having to close for the duration of the repair. Adequate redundancy in service options would help to reduce this type of problem.

Since technology industry often creates a material product that must be transported, or relies upon materials received in order to do business, roads, air and transportation infrastructure is also critical to this network.

Along with roads and enhanced communication networks, schools and training programs were identified as critical infrastructure to the technology industry. Technology is certainly not the “old electronics” any more. Connecting high school and post secondary education more closely to local business needs would enhance economic development, as the industry currently indicates there is difficulty in finding skilled workers for the jobs and tasks at hand in this industry. Specifically there was verbalization of a need for Montana Tech training online to include electronics, mechanical engineering, and even how to read meters and electronic testing equipment.

Several skill sets and talents are needed. Computer operation skills and computer software skills are essential to this industry. One of the gaps reported for this industry cluster is workforce skilled in business applications. There is a great need for sales talent, specifically those who are prepared with an effective technology background. Other education needed is in marketing and business development. Education in new technologies for web developers is needed as well. This includes server-side scripting; the ability to write server-side code such as PHP, ASP, ColdFusion, Ruby, AJAX and more.

Traditional technical talent (programmers, system administrators, desktop administrators, etc.) appear to be available locally. It is more difficult to recruit sales, marketing and business development locally for this industry. There was also a reported shortage locally of good electrical and mechanical engineers. This deficit may differ by county throughout the region.

Regarding local talent and education, retaining our trained young workforce has been very difficult to do. Most indicate that they would like to stay in this area due to family ties and quality of life, if they could find good jobs. As money for education is harder to find, this may present a good opportunity for technology industries to consider assisting students with educational funding with the intent of attaining trained employees. This would require funding parameters that would connect these employers and students with anticipated employment. This could potentially help to mitigate the gap being created in this industry by the aging workforce. DRS Technologies reports that they already have an educational program available, with lock-in commitment to employment for cost recuperation.

Other gaps mentioned included better software for tracking and cost analysis, the ability to supervise more effectively off-site, and workers with acceptable workplace ethics and soft skills.

There are several factors that may help to bridge the gaps for the technology industry. One of these is the enticement of the quality of life in Western Montana which helps to draw workforce to this region. It was also reported that metals and plastic manufacturing located in this region could be a true asset to this area's technology industries, as would a generic raw stock metal supplier. Offering good incentives for company relocation was another idea for bridging the gaps here. Good jobs with good pay will really speak to the workforce, and will enhance the industry.

"Cloud Computing" is developing technology in which computing no longer takes place on the local computer, but on the Internet. Software companies would be able to write programs that are hosted, rather than installed on a local machine. This is something to watch in the future. Mobility and reduced software costs will help to drive this trend in technology. Security and privacy concerns could potentially hold it back.

Going to conferences, using HUD Zone certification to help attain Federal Contracts, asking congressmen and senators for assistance, and doing your homework were all suggested as ways to help move this industry forward. A Technology Roundtable was started in the Flathead a few months ago for Company CEO's. Also, Montana West Economic Development will be hosting a monthly Entrepreneur-to-Entrepreneur program during 2009 that is entirely centered on using technology to grow your business and make it more effective. Local technology industry people will be the speakers for these sessions.

Montana Department of Labor's Research and Analysis Bureau projects modest growth in several technology industries. Specifically included in their projections for growth include:

- Computer & information systems managers
- Computer hardware engineers
- Computer programmers
- Computer software engineers, systems software
- Computer systems analysts
- Electronics engineers
- Materials engineers
- Mechanical engineers
- Network and computer systems administrators
- Network Systems and data communication analysts
- Computer specialists
- Computer support specialists
- Electrical and electronic drafters
- Electronic and electronic repairers
- Electronic home entertainment specialists
- Audio and video equipment technicians
- Media and communication workers
- Telecommunications line installers and repairers
- Computer operators
- Computer-controlled machine operators
- Media and Communication Equipment workers (all other)
- Communications Equipment Operators
- Electrical and electronic equipment assemblers
- Electromechanical equipment assemblers

A recurring theme related to successful companies included a mission statement and company commitment of respect for their employees and care given to the professional development, working relationships and opportunities for those employees. A good example of this is Nomad Technologies. They post an outstanding mission statement on their website at http://www.nomadtechs.com/ :

"Our vision is to be the most innovative company in the specialty vehicle marketplace.
It is our Mission to find new and better ways to integrate advanced interoperable technologies in turn-key mobile platforms for the betterment of the society in which we live. We do this by engineering and producing value driven innovative solutions that exceed our clients' expectations and assist public and private enterprise in the planning, response and management of critical events. We work to sustain profitable growth, but we value integrity, safety, and proactive services and support above profit. We value our employees and we seek to provide a stable, rewarding and challenging work environment to cultivate collaborative teams to bring out the best in everyone at every level of Nomad Technologies."

The story of Nomad Technologies provides a good window on technology opportunities in Western Montana. In a recent article published by Main Street Montana (by Shannon Hughes), Nomad Technologies was showcased as one of the most exciting technology companies to come to the Flathead in recent years. Four outdoors enthusiasts saw a need for better communication resources in the field for emergency management entities. Starting this business in a barn with only the four of them, their brainstorming turned into a multi-million dollar business that now employs 30 people. They have contracts throughout the region, and are working on contracts with national governmental entities as well. Their business is an interesting mix of technology and manufacturing, as they produce mobile command centers for emergency and disaster services. Their business is constantly evolving, with new applications as they reach out to serve new customers and broaden their business base.

Some of the challenges that face Nomad Technologies include staying abreast of technology changes, finding skilled staff, and competition with larger corporations. They choose to stay in Western Montana for the quality of life that they enjoy here.

S&K Technologies is another success story of a local business that has expanded dramatically to a global market. It would be fair to surmise that their success is grounded in a diverse market with global connections and a competitive edge. There is evidence that good products and good customer service helps them to retain and grow their piece of the market. They have expanded to S&K Technologies, S&K Aerospace, and S&K Global Solutions. It appears that this corporation and its sister agencies may have a good formula for success from which a regional effort could benefit.

S&K Aerospace describes themselves as "a highly successful company which provides a broad range of technology solutions to government agencies and the private sector. As a corporation of the Tribes, we are charged with helping to build the economic basis of a self-sufficient tribal community. To accomplish this important goal, we have built a company that is versatile, flexible, and responsive in meeting customer needs. We offer an experienced staff, streamlined contracting, reliable information management, rigorous quality management, and a true

commitment to customer satisfaction. They offer "Program Management/Integration; Supply Chain Management & Logistics Support for aircraft systems and subsystems (military, NASA, DOE); Environmental Services; Research & Development; Information Technology Services; Telecommunications; Technical Manual Publishing; Public Relations; Acquisition Support; and Staff Augmentation Services."

S&K Global Solutions describes themselves as "a highly successful information technology firm which provides a broad range of technology solutions to government agencies and the private sector. As a corporation of the Tribes, we are charged with helping to build the economic basis of a self-sufficient tribal community. To accomplish this important goal, we have built a company that is versatile, flexible, and responsive in meeting customer needs. We offer and experienced staff, streamlined contracting, reliable information management, rigorous quality management, and a true commitment to customer satisfaction." S&K Global Solutions offers Information Technology, Engineering, Telecomm, Housing & Property, Business Consulting, Administrative Support, Technical Writing, and Project Management. This corporation has offices in several states.

The mission statement of S&K Technologies says, "Economic development is central to our vision of a self-sufficient tribal community. By recognizing the preeminence of modern technology, S&K Technologies is looking to the future of our people." The company provides services in the areas of Aerospace, IT and Materials Engineering. This includes software engineering, GPS mapping, Acquisition Support, Material Analysis and Testing, Robotics & Artificial Intelligence, Airframe Structural Teardown and Assessment and More.

From this organization's company/employee newsletters, it is obvious that these organizations value their employees, and provide ongoing training, as well as working for an excellent work environment and company culture. This total package of diversity, employee support, customer service, and global connections is a key to the economic development occurring within these companies. The company reports that their industry is growing. As with most growth, one of their biggest challenges is likely the recruitment and retention of a trained, quality workforce.

From a much different perspective, a very small IT consulting firm in Thompson Falls indicates that they are experiencing an excellent measure of success. Their input correlated the nature of their business and charter to the work and mission of the Regional Innovation Grant. <u>In their words</u>:

"We are using computer and communications tools to stimulate the economy in our county which has the highest unemployment in the state. We have over 65 web sites in a county of just over 10,000 and do eBay sales, computer training, marketing materials and consulting to small business people at rates that the economy can

bear. We have been in business since 2005 and have a Main Street presence. The growth of our business has been extraordinary. The demographic is older people who move here with their businesses or want to develop a cottage industry. The trades people recognize they have to expand and many of them have specifically asked us to market to Canada as they broaden their reach. We currently have a backlog of work and will continue to for some time. We also repair computers and are the location for the local chamber of commerce providing wifi service for travelers and locals. EBay sales have been particularly brisk during the downturn.

We continue to see an explosion of our business and do not seem to find an end to the work activities. We process photos through a source in Seattle, fax documents, and manage the Chamber of Commerce website. We are becoming involved in the local community development group. We project growth to continue at a 50%+ rate each year.

The local telecommunications provides fast DSL service and we continue to do installations and make recommendations for computer solutions. DSL is available in 97% of homes in this county. We buy refurbished computers at reasonable prices, setting them up with simple to use tools and training. We have taught people to use eBay and to build stores to sell crafts and used items.

To work in this industry, a strong computer software background is recommended. We are going to offer free classes to interested individuals in search of talent in the computer. We feel that the public schools teach computer utilization but the technical business practical applications are missing.

We will work to provide education for those motivated to learn and apply the use of computer tools to build businesses. Where we are the service provider we will educate our community on marketing, sales, business development, inventory control, profitability analysis, cost control and other tools to improve business acumen.

In one more business highlight, we look at Superior Satellite in Columbia Falls. This business considers themselves more of a manufacturing business, rather than technology. However, they supply antennae and feed systems to tech companies like Avail Media, which proves the "movie-on-demand" systems to hotels, etc. This company is small and does not experience much employee turnover. Their employees have been there 10, 12, and 15 years. They indicated that they don't have high infrastructure needs or need for training. However, they are currently learning more about exporting, as they now serve markets around the world.

An excerpt from their website at www.superiorsatelliteusa.com: "In 1983, with input from Hughes Communications engineer Norm Weinhouse; Superior Satellite Engineers developed the multi-beam feed system to provide access to multiple satellites from a single antenna. We are not only the pioneers of this technology, but by far the industry leaders with delivery of over 20,000 systems world wide. Our

years of experience have familiarized us with the performance characteristics of virtually every commercial satellite antenna. This assures that our multi-beam feed system and recommended alignments will provide adequate satellite reception. We have a complete testing facility at our plant in Columbia Falls, Montana. With a wide range of antenna sizes available, we can test your customer's particular configuration and provide them with accurate and comprehensive test date."

As with other companies researched for this report, Superior Satellite makes a point on their website of highlighting quality of life in Montana. Jore Manufacturing does the same with an entire gallery of western Montana photos. It is evident that the technology industry is something that people can create by choice in Western Montana, and oftentimes do so in order to live in this beautiful and recreation-rich area. It would follow that preserving the quality of life here should be a critical component in economic development ventures. The essence of the "triple bottom line"—respecting and working to enhance the quality of the community, the environment and the economy—appears to be readily embraced by the technology industry that already exists in this region. Continuing to support those values would likely help to bring more technology industries to Western Montana.

Montana's Regional Innovation Grant (RIG)

Core Leadership Group
Exploring Industry Clusters in Western Montana
Additional "White Paper" Tasks
January 2009

Industry Cluster_____

1. Based on your white paper, affirm/list specific as well as transferable identified skills needed.

2. Brainstorm what you would consider "green jobs" connected to this industry cluster.

3. Identify/briefly discuss current "talent" pipelines in the region (educational institutions, apprenticeships, industry training, etc.) and their ability to respond to identified needs.

4. "Map" the gaps.

5. Identify opportunities for "real" collaboration and coordination regarding this cluster.

6. Draft recommendations specific to this cluster.

7. From your group's perspective, describe a desired "social network" to advance a regional economy involving these clusters.

8. Draft recommendations pertinent to an overall regional economy/approach.

9. How do you see the Department of Labor's role as this process moves forward?